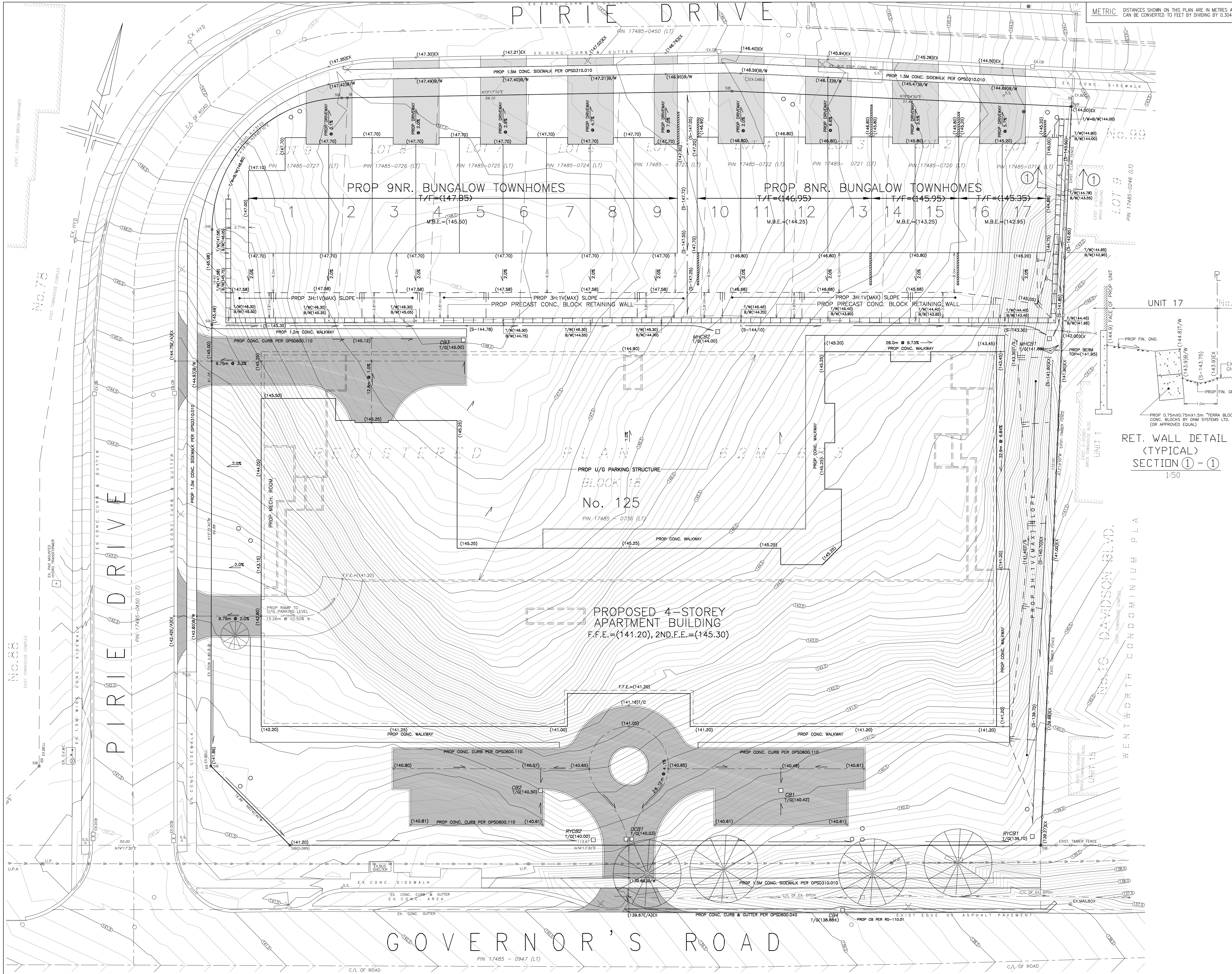
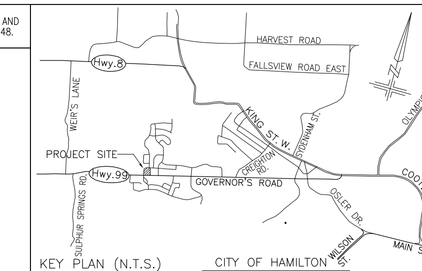
METRIC DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.





KEY PLAN (N.T.S.)

CITY OF HAMILTON

NOTES

1. BENCHMARK: CITY OF HAMILTON MONUMENT NO. 07720020091
   ELEVATIONS SHOWN ARE GEODETIC ORIGIN (CGVD 28) AND ARE DERIVED FROM THE CITY OF HAMILTON VERTICAL CONTROL MONUMENT No. 07720020091 PUBLISHED ELEVATION = 140.044m
   LOCAL BENCHMARK: CUT CROSS SET IN CONCRETE CURB ON EAST SIDE OF PIRIE DRIVE, 19m NORTH OF CENTERLINE OF GOVERNER'S ROAD. ELEVATION = 141.29m
2. BOUNDARIES & EXISTING GROUND ELEVATIONS AS SURVEYED BY J D BARNES LIMITED (FILE # 19-30-464-00-A), DATED NOV.28'19.

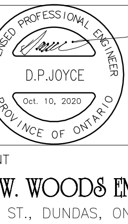
LEGEND

×(226.00)	DENOTES PROPOSED FINISHED GROUND ELEVATION
×(226.00)T/F	DENOTES PROPOSED TOP OF FOUNDATION ELEVATION
×(226.00)G/L	DENOTES PROPOSED GUTTER LINE ELEVATION
× 223.00	DENOTES EXISTING GROUND ELEVATIONS AS SURVEYED BY J D BARNES LIMITED.
246.50	DENOTES EXISTING GROUND CONTOUR
(226.00)	DENOTES PROPOSED FINISHED GROUND ELEVATION AT FRONT/REAR APRON OF DWELLING
(S-226.00)	DENOTES PROPOSED SWALE ELEVATION
T/F=(219.20)	DENOTES PROPOSED TOP OF FOUNDATION ELEVATION
W	DENOTES EXISTING WATER SERVICE SHUTOFF VALVE
U.P.	DENOTES EXISTING UTILITY POLE
HO — HO	DENOTES EXISTING OVERHEAD WIRES
	DENOTES PROPOSED SWALE
	DENOTES PROPOSED DIRECTION OF DRAINAGE
— x — x —	DENOTES EXIST. WIRE OR CHAINLINK FENCE
	DENOTES EXISTING STREET LIGHT STANDARD
	DENOTES PROP STREET TREE
R.W.L.	DENOTES PROPOSED RAINWATER LEADER DOWN PIPE
HYD	DENOTES EXISTING FIRE HYDRANT
	DENOTES PROPOSED 3H:1V(MAX) SLOPE
	DENOTES TOP OF EXISTING SLOPE
	DENOTES PROP "HEAVY DUTY" SILT CONTROL FENCE PER OPSD 219.130
No.3	DENOTES EXISTING MUNICIPAL STREET ADDRESS NO.S.
	DENOTES PROP INDIVIDUAL DRIVEWAYS, (65mm HL3 ON 150mm GRAN. 'A' & 200MM GRAN. 'B' ' TYPE II STONE.)
	DENOTES PROP HEAVY DUTY DRIVEWAY ASPHALT AREA. (40MM HL3 & 65MM HL8 ASPHALT ON 150MM GRAN 'A' & 350MM GRAN 'B' TYPE II STONE BASE)
	DENOTES PROPOSED PAD-MOUNTED HYDRO TRANFORMER.
	DENOTES PROP LANDSCAPED AREA.
	DENOTES MAJOR STORM OVERLAND FLOW ROUTE.
	DENOTES PROP PRECAST CONCRETE MODULAR BLOCK RETAINING WALL, OR APPROVED EQUAL.
	DENOTES PROP TIMBER RETAINING WALL OR APPROVED EQUAL.
M.B.E.=(142.95)	DENOTES LOWEST ALLOWABLE DWELLING BASEMENT ELEVATION PERMITTING GRAVITY SANITARY SEWER SERVICE.

NO	DATE	BY	REVISION

SCALE 1:250 (0 5 10 15) | DATE AUGUST 2020 | REF.

SEAL



CONSULTANT

SIDNEY W. WOODS ENGINEERING (2011) INC.

334 HATT ST., DUNDAS, ON L9H 2H9 (905)627-0775

MUNICIPALITY

CITY OF HAMILTON

OWNER

Fieldgate Properties Limited

5400 YONGE ST., SUITE 300, TORONTO ON M2N 5R5

TITLE

SITE GRADING PLAN

TO ACCOMPANY ZBA APPLICATION ZRA-20-___

(PER FC-20-018)

PROJECT

125 PIRIE DRIVE, DUNDAS

PROP. 17NR BUNGALOW TOWNHOMES &
155 UNIT 4-STOREY SENIOR'S APARTMENT BLDG.

(LOTS 1 TO 9 INCL. & BLOCK 18 OF R.P. 62M-683)

SHEET 1 OF

INDEX NO. E-1338

METRIC: DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

KEY PLAN (N.T.S.)

CITY OF HAMILTON

NOTES

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2. BOUNDARIES & EXISTING GROUND ELEVATIONS AS SURVEYED BY J D BARNES LIMITED (FILE # 19-30-464-00-A), DATED NOV.28'19.

LEGEND

×(226.00)	DENOTES PROPOSED FINISHED GROUND ELEVATION
×(226.00)T/F	DENOTES PROPOSED TOP OF FOUNDATION ELEVATION
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(S-226.00)	DENOTES PROPOSED SWALE ELEVATION
T/F=(219.20)	DENOTES PROPOSED TOP OF FOUNDATION ELEVATION
Ⓦ	DENOTES EXISTING WATER SERVICE SHUTOFF VALVE
● U.P.	DENOTES EXISTING UTILITY POLE
— HO — HO —	DENOTES EXISTING OVERHEAD WIRES
	DENOTES PROPOSED SWALE
←	DENOTES PROPOSED DIRECTION OF DRAINAGE
— x — x —	DENOTES EXIST. WIRE OR CHAINLINK FENCE
	DENOTES EXISTING STREET LIGHT STANDARD
	DENOTES PROP STREET TREE
R.W.L. ○	DENOTES PROPOSED RAINWATER LEADER DOWN PIPE
HYD	DENOTES EXISTING FIRE HYDRANT
	DENOTES PROPOSED 3H:1V(MAX) SLOPE
	DENOTES TOP OF EXISTING SLOPE
	DENOTES PROP "HEAVY DUTY" SILT CONTROL FENCE PER OPSD 219.130
No.3	DENOTES EXISTING MUNICIPAL STREET ADDRESS NO.S.
▨	DENOTES PROPOSED DEP. CURB & CONC. DRIVEWAY ENTRANCE APPROACH PER RD-109 & RD-114.
	DENOTES PROP ROAD-CUT & RESTORATION PER RD-100.01 UNDER EXCAVATION PERMIT BY CITY BONDED CONTRACTOR.
	DENOTES PROP INDIVIDUAL DRIVEWAYS, (65mm HL3 ON 150mm GRAN. 'A' & 200MM GRAN. 'B' ' TYPE II STONE.)
	DENOTES PROP HEAVY DUTY DRIVEWAY ASPHALT AREA. (40MM HL3 & 65MM HL8 ASPHALT ON 150MM GRAN 'A' & 350MM GRAN 'B' TYPE II STONE BASE)
	DENOTES PROPOSED PAD-MOUNTED HYDRO TRANFORMER.
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	DENOTES PROP PRECAST CONCRETE MODULAR BLOCK RETAINING WALL, OR APPROVED EQUAL.
M.B.E.=(142.95)	DENOTES LOWEST ALLOWABLE DWELLING BASEMENT ELEVATION PERMITTING GRAVITY SANITARY SEWER SERVICE.

NO	DATE	BY	REVISION

SCALE 1:250 (0 5 10 15)

DATE AUGUST 2020

REF.

SEAL

LICENSED PROFESSIONAL ENGINEER
D.P.JOYCE
Oct. 10, 2020
PROVINCE OF ONTARIO

CONSULTANT

SIDNEY W. WOODS ENGINEERING (2011) INC.
334 HATT ST., DUNDAS, ON L9H 2H9 (905)627-0775

MUNICIPALITY

CITY OF HAMILTON

OWNER

Fieldgate Properties Limited
5400 YONGE ST., SUITE 300, TORONTO ON M2N 5R5

TITLE

SITE SERVICING PLAN

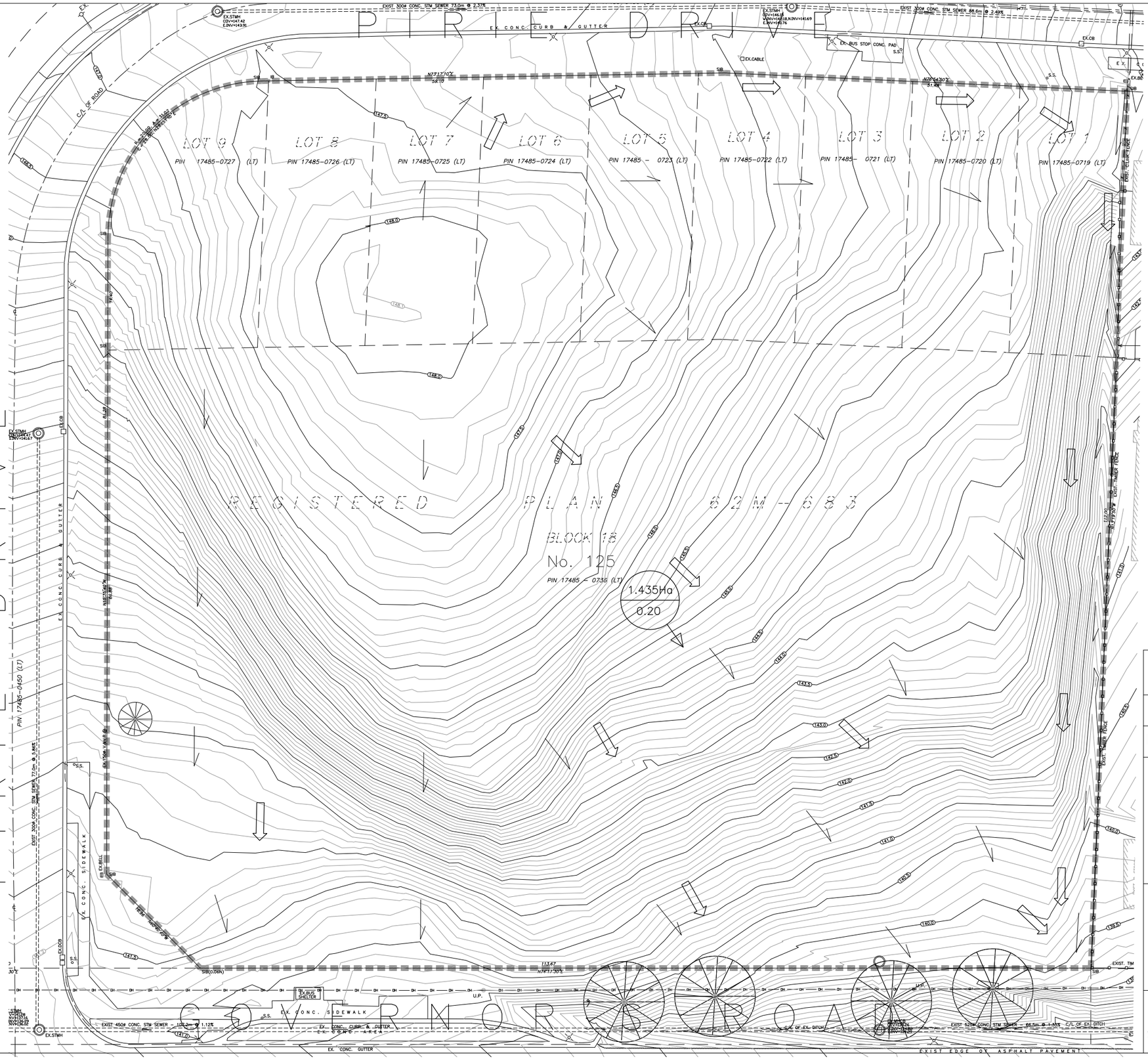
TO ACCOMPANY ZBA APPLICATION ZRA-20-___
(PER FC-20-018)

PROJECT

125 PIRIE DRIVE, DUNDAS

PROP. 17NR BUNGALOW TOWNHOMES &
155 UNIT 4-STOREY SENIOR'S APARTMENT BLDG.
(LOTS 1 TO 9 INCL. & BLOCK 18 OF R.P. 62M-683)

SHEET 2 OF
INDEX NO. E-1338



LICENSED PROFESSIONAL ENGINEER
D.P.JOYCE
OCT. 10, 2020
PROVINCE OF ONTARIO

1:500 0 5 10 20

LEGEND :

- DENOTES MAJOR STORM OVERLAND ROUTE
- DENOTES CATCHMENT BOUNDARY
- DENOTES DRAINAGE DIRECTION
- 0.20Ha / 0.2 — DENOTES AREA IN HECTARES (Ha.) / DENOTES CO-EFFICIENT OF IMPERVIOUSNESS "C"
- DENOTES DESIGNATED DRAINAGE AREAS PER SUBDIVISION "CONSERVATION RUN PHASE 1", 62M-683.

PRE-DEV SITE CHARACTERISTICS

GRASSED AREA = 14, 348. 3SQ. M. (C=0. 20)

TOTAL SITE = 14, 348. 3SQ. M. (C=0. 20)

NO	DATE	BY	REVISION

TITLE

PRE-DEV STM AREA PLAN

TO ACCOMPANY ZBA APPLICATION ZRA-20-___
(PER FC-20-018)

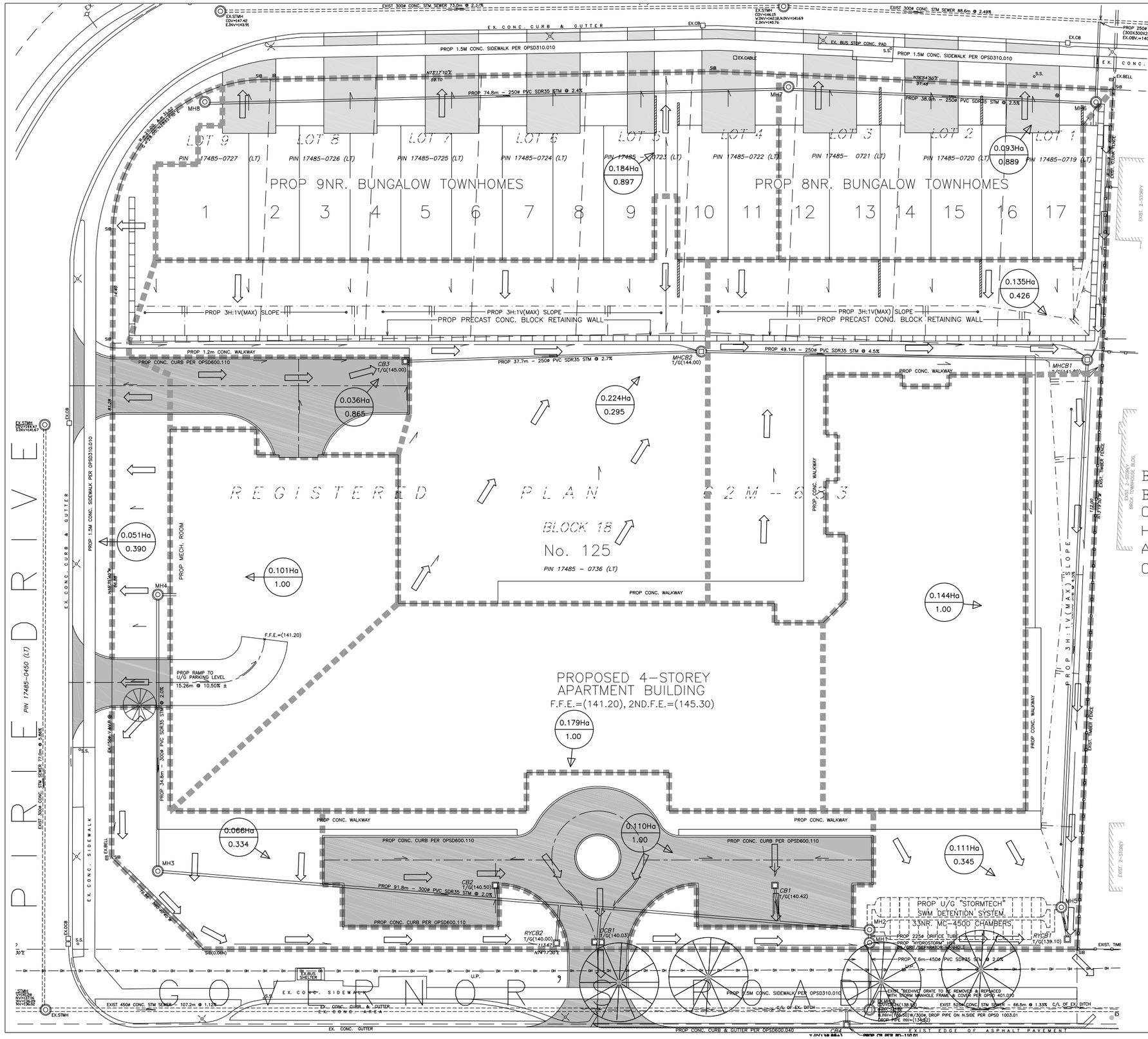
PROJECT

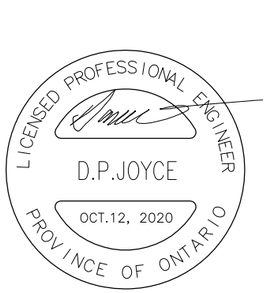
125 PIRIE DRIVE, DUNDAS

PROP. 17NR BUNGALOW TOWNHOMES &
155 UNIT 4-STOREY SENIOR'S APARTMENT BLDG.

SIDNEY W. WOODS ENGINEERING (2011) INC.

SHEET STM-PRE
INDEX NO. E-1338





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LEGEND :

- DENOTES MAJOR STORM OVERLAND ROUTE
- DENOTES CATCHMENT BOUNDARY
- DENOTES DRAINAGE DIRECTION
- 0.20Ha / 0.5 — DENOTES AREA IN HECTARES (Ha.) / DENOTES CO-EFFICIENT OF IMPERVIOUSNESS "C"
- DENOTES EXTERNAL CONTRIBUTION AREA.

POST-DEV SITE CHARACTERISTICS

BUNGALOW UNITS	=	1,973.97SQ. M. (C=1.00)
BUNGALOW DRIVEWAYS	=	424.14SQ. M. (C=1.00)
CONC. RETAINING WALL	=	130.72SQ. M. (C=1.00)
HIGH RISE BUILDING	=	4,238.41SQ. M. (C=1.00)
ASPHALT AREAS	=	1,259.00SQ. M. (C=1.00)
CONC. WALKWAY AREA	=	748.33SQ. M. (C=1.00)
GRASSED AREAS	=	5,573.74SQ. M. (C=0.20)
TOTAL SITE	=	14,348.31SQ. M. (C=0.689)

NO	DATE	BY	REVISION

TITLE

POST-DEV STM AREA PLAN

TO ACCOMPANY ZBA APPLICATION ZRA-20-___
(PER FC-20-018)

PROJECT

125 PIRIE DRIVE, DUNDAS

PROP. 17NR BUNGALOW TOWNHOMES &
155 UNIT 4-STOREY SENIOR'S APARTMENT BLDG.

SIDNEY W. WOODS ENGINEERING (2011) INC.

SHEET STM-POST
INDEX NO. E-1338

StormTech MC-4500 Chamber

Designed to meet the most stringent industry performance standards for superior structural integrity while providing designers with a cost-effective method to save valuable land and protect water resources. The StormTech system is designed primarily to be used under parking lots thus maximizing land usage for commercial and municipal applications.

StormTech MC-4500 Chamber (not to scale)
Nominal Chamber Specifications

Size (L x W x H)	52" (1321 mm) x 100" (2540 mm) x 60" (1524 mm)
Chamber Storage	106.5 ft³ (3.01 m³)
Min. Installed Storage*	162.6 ft³ (4.60 m³)
Weight	120 lbs (54.4 kg)

* This assumes a minimum of 12" (300 mm) of stone above, 9" (230 mm) of stone below chambers, 9" (230 mm) of stone between chambers/end caps and 40% stone porosity.

StormTech MC-4500 End Cap (not to scale)
Nominal End Cap Specifications

Size (L x W x H)	35.1" (891 mm) x 90.2" (2291 mm) x 59.4" (1509 mm)
End Cap Storage	35.7 ft³ (1.01 m³)
Min. Installed Storage*	108.7 ft³ (3.08 m³)
Weight	120 lbs (54.4 kg)

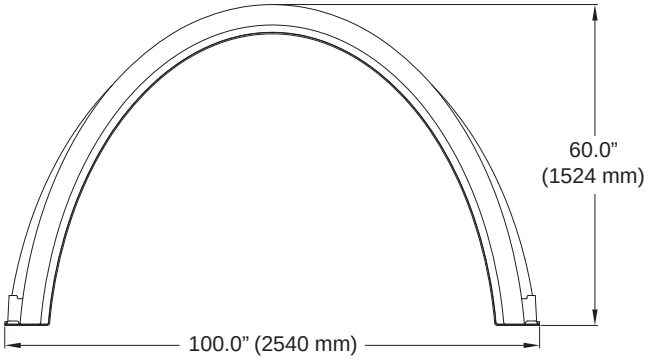
*This assumes a minimum of 12" (300 mm) of stone above, 9" (230 mm) of stone below, 12" (300 mm) of stone perimeter, 9" (230 mm) of stone between chambers/end caps and 40% stone porosity.

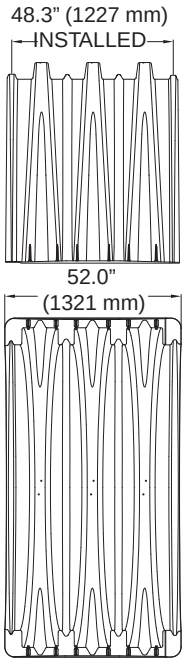
Shipping

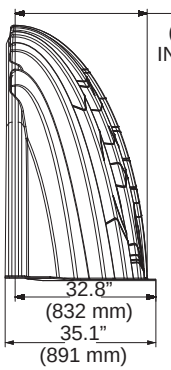
7 chambers/pallet

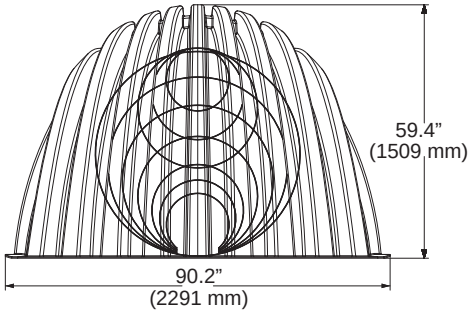
7 end caps/pallet

11 pallets/truck









StormTech MC-4500 Chamber

Storage Volume Per Chamber/End Cap ft³ (m³)

	Bare Unit Storage ft³ (m³)	Chamber/End Cap and Stone Unit Volume — Stone Foundation Storage Depth in. (mm)			
		9 (230)	12 (300)	15 (375)	18 (450)
MC-4500 Chamber	106.5 (3.02)	162.6 (4.60)	166.3 (4.71)	169.9 (4.81)	173.6 (4.91)
MC-4500 End Cap	35.7 (1.0)	108.7 (3.08)	111.9 (3.17)	115.2 (3.26)	118.4 (3.35)

NOTE: Assumes 9" (230 mm) row spacing, 40% stone porosity, 12" (300 mm) stone above and includes the bare chamber/end cap volume. End cap volume assumes 12" (300 mm) stone perimeter.

Amount of Stone Per Chamber

ENGLISH tons (yd³)	Stone Foundation Depth			
	9"	12"	15"	18"
MC-4500	7.4 (5.2)	7.8 (5.5)	8.3 (5.9)	8.8 (6.2)
End Cap	9.6 (6.8)	10.0 (7.1)	10.4 (7.4)	10.9 (7.7)
METRIC kg (m³)	230 mm	300 mm	375 mm	450 mm
MC-4500	6681 (4.0)	7117 (4.2)	7552 (4.5)	7987 (4.7)
End Cap	8691 (5.2)	9075 (5.4)	9460 (5.6)	9845 (5.9)

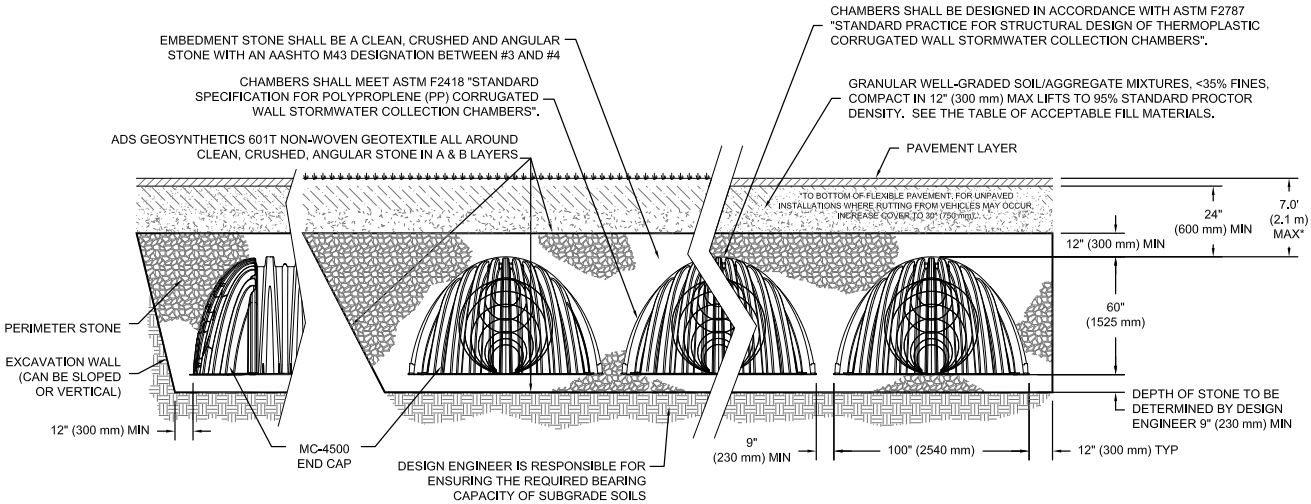
NOTE: Assumes 12" (300 mm) of stone above, 9" (230 mm) row spacing, and 12" (300 mm) of perimeter stone in front of end caps.

Volume of Excavation Per Chamber/End Cap in yd³ (m³)

	Stone Foundation Depth			
	9" (230 mm)	12" (300 mm)	15" (375 mm)	18" (450 mm)
MC-3500	10.5 (8.0)	10.8 (8.3)	11.2 (8.5)	11.5 (8.8)
End Cap	9.3 (7.1)	9.6 (7.3)	9.9 (7.6)	10.2 (7.8)

NOTE: Assumes 9" (230 mm) of separation between chamber rows, 12" (300 mm) of perimeter in front of end caps, and 24" (600 mm) of cover. The volume of excavation will vary as the depth of cover increases.

General Cross Section



*FOR COVER DEPTHS GREATER THAN 7.0' (2.1 mm) PLEASE CONTACT STORMTECH

THE INSTALLED CHAMBER SYSTEM SHALL PROVIDE THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS SECTION 12.12 FOR EARTH AND LIVE LOADS, WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.

5.0 Cumulative Storage Volumes

Tables 9 and **10** provide cumulative storage volumes for the MC-4500 chamber and end cap. These tables can be used to calculate the stage-storage relationship for the retention or detention system. Digital spreadsheets in which the number of chambers and end caps can be input for quick cumulative storage calculations are available at www.stormtech.com. For assistance with site-specific calculations or input into routing software, contact the StormTech Technical Services Department.

TABLE 9 – MC-4500 Incremental Storage Volume Per Chamber

Assumes 40% stone porosity. Calculations are based upon a 9" (230 mm) stone base under the chambers, 12" (300 mm) of stone above chambers, and 9" (230 mm) spacing between chambers.

Depth of Water in System Inches (mm)	Cumulative Chamber Storage ft³ (m³)	Total System Cumulative Storage ft³ (m³)
81 (2057)	0	162.62 (4.605)
80 (2032)	0	161.40 (4.570)
79 (2007)	Stone 0	160.18 (4.536)
78 (1981)	Cover 0	158.96 (4.501)
77 (1956)	0	157.74 (4.467)
76 (1930)	0	156.52 (4.432)
75 (1905)	0	155.30 (4.398)
74 (1880)	0	154.09 (4.363)
73 (1854)	0	152.87 (4.329)
72 (1829)	0	151.65 (4.294)
71 (1803)	0	150.43 (4.260)
70 (1778)	0	149.21 (4.225)
69 (1753)	106.51 (3.016)	147.99 (4.191)
68 (1727)	106.47 (3.015)	146.75 (4.156)
67 (1702)	106.35 (3.012)	145.46 (4.119)
66 (1676)	106.18 (3.007)	144.14 (4.082)
65 (1651)	105.98 (3.001)	142.80 (4.044)
64 (1626)	105.71 (2.993)	141.42 (4.005)
63 (1600)	105.25 (2.981)	139.93 (3.962)
62 (1575)	104.59 (2.962)	138.31 (3.917)
61 (1549)	103.79 (2.939)	136.61 (3.869)
60 (1524)	102.88 (2.913)	134.85 (3.819)
59 (1499)	101.88 (2.885)	133.03 (3.767)
58 (1473)	100.79 (2.854)	131.16 (3.714)
57 (1448)	99.63 (2.821)	129.24 (3.660)
56 (1422)	98.39 (2.786)	127.28 (3.604)
55 (1397)	97.10 (2.749)	125.28 (3.548)
54 (1372)	95.73 (2.711)	123.25 (3.490)
53 (1346)	94.32 (2.671)	121.18 (3.431)
52 (1321)	92.84 (2.629)	119.08 (3.372)
51 (1295)	91.32 (2.586)	116.94 (3.311)
50 (1270)	89.74 (2.541)	114.78 (3.250)
49 (1245)	88.12 (2.495)	112.59 (3.188)
48 (1219)	86.45 (2.448)	110.37 (3.125)
47 (1194)	84.75 (2.400)	108.13 (3.062)
46 (1168)	83.00 (2.350)	105.86 (2.998)
45 (1143)	81.21 (2.300)	103.56 (2.933)
44 (1118)	79.38 (2.248)	101.25 (2.867)
43 (1092)	77.52 (2.195)	98.91 (2.801)

NOTE: Add 1.22 ft³ (0.035 m³) of storage for each additional inch (25 mm) of stone foundation. Contact StormTech for cumulative volume spreadsheets in digital format.

Depth of Water in System Inches (mm)	Cumulative Chamber Storage ft³ (m³)	Total System Cumulative Storage ft³ (m³)
42 (1067)	75.62 (2.141)	96.55 (2.734)
41 (1041)	73.69 (2.087)	94.18 (2.667)
40 (1016)	71.72 (2.031)	91.78 (2.599)
39 (991)	69.73 (1.974)	89.36 (2.531)
38 (965)	67.70 (1.917)	86.93 (2.462)
37 (948)	65.65 (1.859)	84.48 (2.392)
36 (914)	63.57 (1.800)	82.01 (2.322)
35 (889)	61.46 (1.740)	79.53 (2.252)
34 (864)	59.32 (1.680)	77.03 (2.181)
33 (838)	57.17 (1.619)	74.52 (2.110)
32 (813)	54.98 (1.557)	71.99 (2.038)
31 (787)	52.78 (1.495)	69.45 (1.966)
30 (762)	50.55 (1.431)	66.89 (1.894)
29 (737)	48.30 (1.368)	64.32 (1.821)
28 (711)	46.03 (1.303)	61.74 (1.748)
27 (686)	43.74 (1.239)	59.15 (1.675)
26 (680)	41.43 (1.173)	56.55 (1.601)
25 (610)	39.11 (1.107)	53.93 (1.527)
24 (609)	36.77 (1.041)	51.31 (1.453)
23 (584)	34.41 (0.974)	48.67 (1.378)
22 (559)	32.03 (0.907)	46.03 (1.303)
21 (533)	29.64 (0.839)	43.38 (1.228)
20 (508)	27.23 (0.771)	40.71 (1.153)
19 (483)	24.81 (0.703)	38.04 (1.077)
18 (457)	22.38 (0.634)	35.37 (1.001)
17 (432)	19.94 (0.565)	32.68 (0.925)
16 (406)	17.48 (0.495)	29.99 (0.849)
15 (381)	15.01 (0.425)	27.29 (0.773)
14 (356)	12.53 (0.355)	24.58 (0.696)
13 (330)	10.05 (0.284)	21.87 (0.619)
12 (305)	7.55 (0.214)	19.15 (0.542)
11 (279)	5.04 (0.143)	16.43 (0.465)
10 (254)	2.53 (0.072)	13.70 (0.388)
9 (229)	0	10.97 (0.311)
8 (203)	0	9.75 (0.276)
7 (178)	0	8.53 (0.242)
6 (152)	Stone 0	7.31 (0.207)
5 (127)	Foundation 0	6.09 (0.173)
4 (102)	0	4.87 (0.138)
3 (76)	0	3.66 (0.104)
2 (51)	0	2.44 (0.069)
1 (25)	0	1.22 (0.035)

5.0 Cumulative Storage Volumes

TABLE 10 – MC-4500 Incremental Storage Volume Per End Cap

Assumes 40% stone porosity. Calculations are based upon a 9" (229 mm) stone base under the end caps, 12" (300 mm) of stone above end caps, 9" (230 mm) of spacing between end caps and 12" (300 mm) of stone perimeter.

Depth of Water in System Inches (mm)	Cumulative Chamber Storage ft³ (m³)	Total System Cumulative Storage ft³ (m³)
81 (2057)	0	108.69 (3.078)
80 (2032)	0	107.62 (3.047)
79 (2007)	Stone 0	106.54 (3.017)
78 (1981)	Cover 0	105.46 (2.986)
77 (1956)	0	104.38 (2.956)
76 (1930)	0	103.31 (2.925)
75 (1905)	0	102.23 (2.895)
74 (1880)	0	101.15 (2.864)
73 (1854)	0	100.07 (2.834)
72 (1829)	0	99.00 (2.803)
71 (1803)	0	97.92 (2.773)
70 (1778)	0	96.84 (2.742)
69 (1753)	35.71 (1.011)	95.76 (2.712)
68 (1727)	35.71 (1.011)	94.69 (2.681)
67 (1702)	35.70 (1.011)	93.60 (2.651)
66 (1676)	35.67 (1.010)	92.51 (2.620)
65 (1651)	35.62 (1.009)	91.40 (2.588)
64 (1626)	35.56 (1.007)	90.29 (2.557)
63 (1600)	35.47 (1.004)	89.16 (2.525)
62 (1575)	35.36 (1.001)	88.01 (2.492)
61 (1549)	35.21 (0.997)	86.85 (2.459)
60 (1524)	35.05 (0.992)	85.67 (2.426)
59 (1499)	34.86 (0.987)	84.48 (2.392)
58 (1473)	34.64 (0.981)	83.27 (2.358)
57 (1448)	34.40 (0.974)	82.05 (2.323)
56 (1422)	34.13 (0.966)	80.81 (2.288)
55 (1397)	33.83 (0.958)	79.55 (2.253)
54 (1372)	33.51 (0.949)	78.28 (2.217)
53 (1346)	33.16 (0.939)	77.00 (2.180)
52 (1321)	32.79 (0.928)	75.70 (2.144)
51 (1295)	32.39 (0.917)	74.38 (2.106)
50 (1270)	31.98 (0.906)	73.06 (2.069)
49 (1245)	31.54 (0.893)	71.71 (2.031)
48 (1219)	31.07 (0.880)	70.36 (1.992)
47 (1194)	30.59 (0.866)	68.99 (1.954)
46 (1168)	30.09 (0.852)	67.61 (1.915)
45 (1143)	29.56 (0.837)	66.22 (1.875)
44 (1118)	29.02 (0.822)	64.81 (1.835)
43 (1092)	28.45 (0.806)	63.40 (1.795)

NOTE: Add 1.08 ft³ (0.031 m³) of storage for each additional inch (25 mm) of stone foundation. Contact stormtech for cumulative volume spreadsheets in digital format.

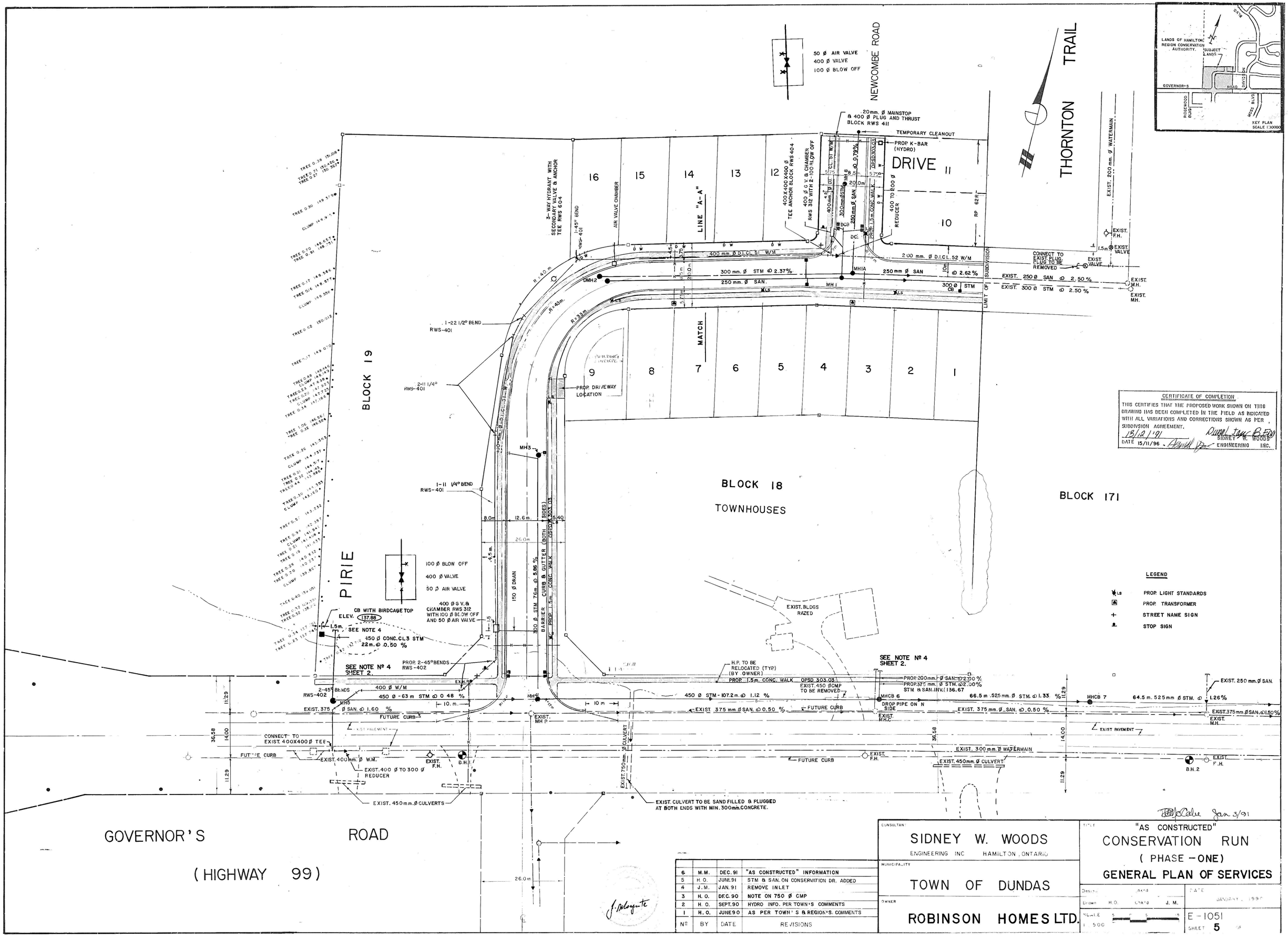
Depth of Water in System Inches (mm)	Cumulative Chamber Storage ft³ (m³)	Total System Cumulative Storage ft³ (m³)
42 (1067)	27.87 (0.789)	61.97 (1.755)
41 (1041)	27.27 (0.772)	60.53 (1.714)
40 (1016)	26.65 (0.755)	59.08 (1.673)
39 (991)	26.01 (0.736)	57.62 (1.632)
38 (965)	25.35 (0.718)	56.15 (1.590)
37 (948)	24.68 (0.699)	54.67 (1.548)
36 (914)	23.99 (0.679)	53.18 (1.506)
35 (889)	23.28 (0.659)	51.68 (1.463)
34 (864)	22.56 (0.639)	50.17 (1.421)
33 (838)	21.82 (0.618)	48.64 (1.377)
32 (813)	21.06 (0.596)	47.11 (1.334)
31 (787)	20.29 (0.575)	45.57 (1.290)
30 (762)	19.50 (0.552)	44.02 (1.247)
29 (737)	18.70 (0.530)	42.46 (1.202)
28 (711)	17.88 (0.506)	40.89 (1.158)
27 (686)	17.04 (0.483)	39.31 (1.113)
26 (680)	16.19 (0.459)	37.73 (1.068)
25 (610)	15.33 (0.434)	36.14 (1.023)
24 (609)	14.46 (0.410)	34.53 (0.978)
23 (584)	13.58 (0.384)	32.93 (0.932)
22 (559)	12.68 (0.359)	31.31 (0.887)
21 (533)	11.77 (0.333)	29.69 (0.841)
20 (508)	10.85 (0.307)	28.06 (0.794)
19 (483)	9.91 (0.281)	26.42 (0.748)
18 (457)	8.97 (0.254)	24.77 (0.702)
17 (432)	8.01 (0.227)	23.12 (0.655)
16 (406)	7.04 (0.199)	21.46 (0.608)
15 (381)	6.07 (0.172)	19.80 (0.561)
14 (356)	5.08 (0.144)	18.13 (0.513)
13 (330)	4.08 (0.116)	16.45 (0.466)
12 (305)	3.07 (0.087)	14.77 (0.418)
11 (279)	2.06 (0.058)	13.09 (0.371)
10 (254)	1.03 (0.029)	11.39 (0.323)
9 (229)	0	9.70 (0.275)
8 (203)	0	8.62 (0.244)
7 (178)	0	7.54 (0.214)
6 (152)	Stone 0	6.46 (0.183)
5 (127)	Foundation 0	5.39 (0.153)
4 (102)	0	4.31 (0.122)
3 (76)	0	3.23 (0.092)
2 (51)	0	2.15 (0.061)
1 (25)	0	1.08 (0.031)

```
      Output File (4.7) 125PIRIE     opened 2020-10-14  22:52
      Units used are defined by G =    9.810
          72   144     5.000        are MAXDT MAXHYD & DTMIN values
      Licensee: Sidney W Woods Engineering Inc.
 2    STORM
          1     1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
    688.200     Coefficient  a
      5.000     Constant  b    (min)
       .753     Exponent  c
       .450     Fraction to peak  r
    360.000     Duration ó  360 min
              48.580 mm     Total depth
 3    IMPERVIOUS
          1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
       .020     Manning "n"
    100.000     SCS Curve No or C
       .100     Ia/S Coefficient
       .000     Initial Abstraction
 4    CATCHMENT
      1.000     ID No.ó 99999
      1.107     Area in hectares
     75.000     Length (PERV) metres
      2.000     Gradient (%)
     65.100     Per cent Impervious
     75.000     Length (IMPERV)
       .000     %Imp. with Zero Dpth
          1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
       .200     Manning "n"
     65.000     SCS Curve No or C
       .100     Ia/S Coefficient
     13.677     Initial Abstraction
          1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
             .177       .000       .000       .000 c.m/s
             .146       .991       .696     C perv/imperv/total
15    ADD RUNOFF
             .177       .177       .000       .000 c.m/s
10    POND
    15 Depth - Discharge - Volume sets
         .000       .000         .0
         .125      .0510        8.1
         .250      .0722       21.0
         .375      .0884       32.4
         .500       .102       44.0
         .625       .114       55.0
         .750       .125       65.3
         .875       .135       74.7
        1.000       .144       83.2
        1.125       .153       90.8
        1.250       .162       97.2
        1.375       .169      101.9
        1.500       .177      103.0
        1.625       .184      104.2
        1.750       .191      104.6
      Peak Outflow    =      .110 c.m/s
      Maximum Depth   =      .582 metres
      Maximum Storage =       51. c.m
             .177       .177       .110       .000 c.m/s
16    NEXT LINK
             .177       .110       .110       .000 c.m/s
```

```
 8     PIPE
           .500     Minimum velocity  m/sec
          4.000     Maximum velocity  m/sec
           .013     Pipe Manning's 'n'
           .300     Diameter in metres
          2.000     Select Grade in %
          Depth         =      .204 metres
          Velocity      =     2.151 m/sec
          Pipe Capacity =      .137 c.m/s
          Critical depth=      .255 metres
    9     ROUTE
          7.600     Conduit Length
           .001     Supply X-factor <.5
          2.650     Supply K-lag (sec)
           .500     Beta weighting factor
          5.263     Routing timestep
              1     No. of sub-reaches
                  .177       .110       .110       .000 c.m/s
   20     MANUAL
```

```
      Output File (4.7) 125PIRIE     opened 2020-10-14  23:05
      Units used are defined by G =    9.810
          72   144     5.000        are MAXDT MAXHYD & DTMIN values
      Licensee: Sidney W Woods Engineering Inc.
 2    STORM
          1     1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
   1036.100    Coefficient  a
      4.500    Constant  b    (min)
       .733    Exponent  c
       .450    Fraction to peak  r
    360.000    Duration ó  360 min
              82.381 mm     Total depth
 3    IMPERVIOUS
          1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
       .020    Manning "n"
    100.000    SCS Curve No or C
       .100    Ia/S Coefficient
       .000    Initial Abstraction
 4    CATCHMENT
      1.000    ID No.ó 99999
      1.107    Area in hectares
     75.000    Length (PERV) metres
      2.000    Gradient (%)
     65.100    Per cent Impervious
     75.000    Length (IMPERV)
       .000    %Imp. with Zero Dpth
          1     Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
       .200    Manning "n"
     65.000    SCS Curve No or C
       .100    Ia/S Coefficient
     13.677    Initial Abstraction
          1     Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
             .283       .000       .000       .000 c.m/s
             .279       .984       .738     C perv/imperv/total
15    ADD RUNOFF
             .283       .283       .000       .000 c.m/s
10    POND
     15 Depth - Discharge - Volume sets
         .000       .000         .0
         .125      .0510        8.1
         .250      .0722       10.9
         .375      .0884       32.4
         .500       .102       44.0
         .625       .114       55.0
         .750       .125       65.3
         .875       .135       74.7
        1.000       .144       83.2
        1.125       .153       90.8
        1.250       .162       97.2
        1.375       .169      101.9
        1.500       .177      103.0
        1.625       .184      104.2
        1.750       .191      104.6
      Peak Outflow    =      .167 c.m/s
      Maximum Depth   =     1.336 metres
      Maximum Storage =      100. c.m
             .283       .283       .167       .000 c.m/s
16    NEXT LINK
             .283       .167       .167       .000 c.m/s
```

```
8     PIPE
           .500     Minimum velocity  m/sec
          4.000     Maximum velocity  m/sec
           .013     Pipe Manning's 'n'
           .375     Diameter in metres
          2.000     Select Grade in %
          Depth         =      .225 metres
          Velocity      =     2.409 m/sec
          Pipe Capacity =      .248 c.m/s
          Critical depth=      .300 metres
    9     ROUTE
          7.600     Conduit Length
           .015     Supply X-factor <.5
          2.367     Supply K-lag (sec)
           .500     Beta weighting factor
          4.615     Routing timestep
              1     No. of sub-reaches
                  .283       .167       .167       .000 c.m/s
   20     MANUAL
```



CERTIFICATE OF COMPLETION

THIS CERTIFIES THAT THE PROPOSED WORK SHOWN ON THIS DRAWING HAS BEEN COMPLETED IN THE FIELD AS INDICATED WITH ALL VARIATIONS AND CORRECTIONS SHOWN AS PER , SUBDIVISION AGREEMENT.

13/2/91

DATE 15/11/96 SIDNEY W. WOODS ENGINEERING INC.

Nº	BY	DATE	REVISIONS
6	M.M.	DEC. 91	"AS CONSTRUCTED" INFORMATION
5	H. O.	JUNE 91	STM & SAN. ON CONSERVATION DR. ADDED
4	J. M.	JAN. 91	REMOVE INLET
3	H. O.	DEC. 90	NOTE ON 750 Ø CMP
2	H. O.	SEPT. 90	HYDRO INFO. PER TOWN'S COMMENTS
1	H. O.	JUNE 90	AS PER TOWN'S & REGION'S. COMMENTS

Jan 3/91

CONSULTANT: SIDNEY W. WOODS ENGINEERING INC HAMILTON, ONTARIO

MUNICIPALITY: TOWN OF DUNDAS

OWNER: ROBINSON HOMES LTD.

TITLE: "AS CONSTRUCTED" CONSERVATION RUN (PHASE – ONE) GENERAL PLAN OF SERVICES

Design: DAVID
Drawn: H.O. CHK'D J. M.
DATE: JANUARY, 1990
SCALE: 1:500
E-1051
SHEET 5


2.31 Ha
60
PROP. K-BAR(HYDRO)
DRIVE
CONSERVATION DRIVE
0.14 Ha
60
0.45 Ha
60
250 Ø SAN @ 0.79 %
250 Ø 80.3m @ 2.37 %
MH IA
250 Ø SAN 40.5m @ 2.62 %
0.09Ha
60
EXIST. 44m 250 Ø SAN. @ 2.62 %
EXIST. MH
BLOCK 19
BLOCK 18
TOWNHOUSES
BLOCK 171
PIRIE
1.26 Ha
110
1.48 Ha
110
H.P. TO BE RELOCATED (TYP.)
PROP. 200 Ø SAN. @ 2.00 %
EXIST. 375mm Ø SAN. @ 1.60 %
EXIST. MH B
EXIST. 375mm Ø SAN. @ 1.60 %
EXIST. MH C
EXIST. 375mm Ø SAN. @ 0.50 %
EXIST. MH D
EXIST. PAVEMENT
36.6m
26.0m
GOVERNOR'S ROAD
(HIGHWAY 99)
LEGEND
0.73Ha DENOTES AREA IN HECTARE
60 DENOTES POPULATION PER HECTARE
PROP. LIGHT STANDARDS
PROP. TRANSFORMER
CERTIFICATE OF COMPLETION
THIS CERTIFIES THAT THE PROPOSED WORK SHOWN ON THIS DRAWING HAS BEEN COMPLETED IN THE FIELD AS INDICATED WITH ALL VARIATIONS AND CORRECTIONS SHOWN AS PER SUBDIVISION AGREEMENT.
13/12/91
DATE
SIDNEY W. WOODS ENGINEERING INC.

Nº	BY	DATE	REVISIONS
2	H. O.	SEPT.90	HYDRO INFO. ADDED PER TOWN'S COMMENTS
1	H. O.	JUNE 90	AS PER TOWN'S & REGION'S COMMENTS

CONSULTANT: SIDNEY W. WOODS ENGINEERING INC. HAMILTON, ONTARIO

MUNICIPALITY: TOWN OF DUNDAS

OWNER: ROBINSON HOMES LTD.

TITLE: "AS CONSTRUCTED" CONSERVATION RUN (PHASE - ONE) SANITARY AREA PLAN

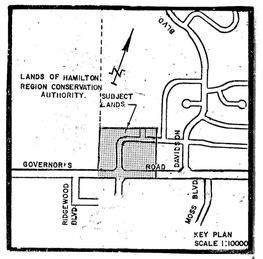
Design: H.O. | Chk'd | Drawn: H.O. | Chk'd: J. M.

SCALE 1 : 500

DATE: JANUARY, 1990

E-1051

SHEET SAN. OF



K-BAR (HYDRO)

CONSEVATION DRIVE

DRIVE

MH 8

39.6m. @ 1.06%

300 Ø STM

CB

Ls

300 Ø STM-73m @ 2.37%

MH2

MH1

300 Ø STM 43.8 m @ 2.49%

EXIST 300 ØSTM @ 2.50%

R=45m.

R=33m.

0.77 Ha
C=0.40

0.15 Ha
C=0.40

0.19 Ha
C=0.40

0.12 Ha
C=0.40

CB MH3

BLOCK 19

PIRIE

BLOCK 18
TOWNHOUSES

0.96 Ha
C= 0.60

BLOCK 171

8.0m. 12.6m. 5.4m.

300 ØSTM-77 m @ 5.86 %

0.55 Ha
C=0.60

1.05 Ha
C=0.60

CB WITH BIRDCAGE
TOP. ELEV. 137.88

1.50Ha
C=0.25

450 Ø CONC. CL 3 STM
22 m. @ 0.50 %

DCB

H.P. TO BE
RELOCATED (TYP.)

MH 5

PROP 450 Ø STM-63 m @ 0.48 %

MH 4

450 Ø STM 107.2 m @ 1.12 %

MHCB 6

525 Ø STM-66.5m@ 1.33 %

MHCB 7

525 Ø STM — 64.5 m @ 1.26 %

EXIST. MHCB

FUTURE CURB

11.29m.
14.00m.
36.58 m.

EXIST. CULVERT TO BE SAND FILLED & PLUGGED AT BOTH ENDS WITH MIN. 300 Ø CONCRETE.

0.40Ha
C=0.60

GOVERNOR'S ROAD

(HIGHWAY 99)

26.0 m

LEGEND

AREA IN HECTARES

0.23
0.4

RUNOFF CO-EFFICIENT

PROP. LIGHT STANDARDS

PROP. TRANSFORMER

No	BY	DATE	REVISIONS
3	H.O.	DEC. 90	NOTE ON 750 Ø CMP
2	H.O.	SEPT. 90	HYDRO INFO. ADDED PER TOWN'S COMMENTS
1	H.O.	JUNE 90	AS PER TOWN'S & REGION'S COMMENTS

CONSULTANT
SIDNEY W. WOODS
ENGINEERING INC HAMILTON ONTAR

MUNICIPALITY
TOWN OF DUNDAS

OWNER
ROBINSON HOMES LTD.

CONSERVATION RUN
(PHASE - ONE)
STORM AREA PLAN

DESIGN J. M.

SHEET STM